

Psocoptera (Insecta) from Nest Webs of *Badumna candida* (L. Koch) (Desidae: Araneae) in Queensland

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SMITHERS, C. N. Psocoptera (Insecta) from nest webs of *Badumna candida* (L. Koch) (Desidae: Araneae) in Queensland. *Proc. Linn. Soc. N.S.W.* 112 (1), 1990: 27-31.

Two new species of Psocoptera are described and records of another five species from the nest webs of the spider *Badumna candida* (L. Koch) are given from Townsville, Queensland. Most of the species are usually inhabitants of dried leaves, material which the spiders incorporate into their nest webs.

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INTRODUCTION

New (1974) recorded ten species of Psocoptera (Insecta) from the nests of the spider *Badumna candida* (L. Koch) (as *Ixeuticus candidus* (L. Koch)) in Victoria. During studies of the nest webs of the same species of spider at Townsville, Queensland, M. F. Downes has taken several species of Psocoptera, some of which represent two undescribed species. This material is recorded here. Further details of their occurrence in association with the spiders will be published elsewhere by Downes.

NEW SPECIES AND NEW RECORDS

LIPOSCELIDAE

Liposcelis spp.

The collection contains a few specimens of *Liposcelis* (2 spp.) which cannot be identified until further work has been done on the Australian members of this large genus, some species of which are worldwide in distribution.

ECTOPSOCIDAE

Ectopsocus downesi sp. nov.

FEMALE

Coloration (in alcohol). Head and antennae pale brown with faintest suggestion of darker epicranial patches. Fourth segment of maxillary palp a little darker than head. Body and legs pale brown. Fore wings (Fig. 1) very faintly tinged with brown, the shading paler adjacent to veins, darker at ends of main veins and at Rs and M junction. Hind wing (Fig. 2) hyaline.

Morphology. Length of body: 1.6mm. Median epicranial suture indistinct. Head strongly setose except for glabrous genae. Lengths of flagellar segments: fl₁:.11mm; fl₂:.07mm. Antennae short, reaching only to about base of abdomen. Eyes fairly small, not reaching level of vertex. IO/D (Badonnel): 2.6; PO:.66. Median ocellus much smaller than lateral ocelli. Femora of all legs a little broader than usual in the genus, clearly much broader than tibiae. Hind femur about three times as broad as tibia, broadest at distal quarter. Measurements of hind leg: F:.27mm; T:.41mm; t₁:.12mm; t₂:.06mm; rt:2:1; ct:10:0. Fore wing length: 1.13mm; width: .46mm. Fore wing (Fig. 1)

broad and rounded distally. Pterostigma slightly convex behind, as wide as costal cell. Rs and M meet in a point. Wing margin setose from base of costa to nodulus, hind margin glabrous from nodulus to wing base. Wing setae very strong, especially so in basal half of wing. Wing margin with single row of setae except from base of pterostigma to about R4+5, where there is a double row. Hind wing (Fig. 2) glabrous except for strong marginal setae between R2+3 and R4+5. Epiproct lightly sclerotized with two strong setae on posterior margin, two strong setae arising from body of epiproct as well as a small number of almost symmetrically arranged small setae. Paraproct (Fig. 3) with a field of eight trichobothria behind which is a row of fine setae. Hind margin with a large seta, one stout cone and a smaller one subtended by a small seta, near which is a smaller seta. Subgenital plate (Fig. 4) with well sclerotized, median posterior lobe with strong setae on each side of which the plate margin is very strongly sclerotized. Middle part of lobe lightly sclerotized. Body of plate clothed with fine setae. Inner side of plate ornamented medially with sinuous wrinkles and a reticulate pattern postero-laterally. Gonapophyses (Fig. 5) with well sclerotized, pointed, ventral valve. Dorsal valve membranous, broad basally, curved and narrow distally, supported by a sclerotized bar in distal half. External valve long, narrow, broadest distally, with a few long apical setae of which one is clearly longer than the others. Dorsal border of valve heavily sclerotized, especially near base.

MALE Unknown.

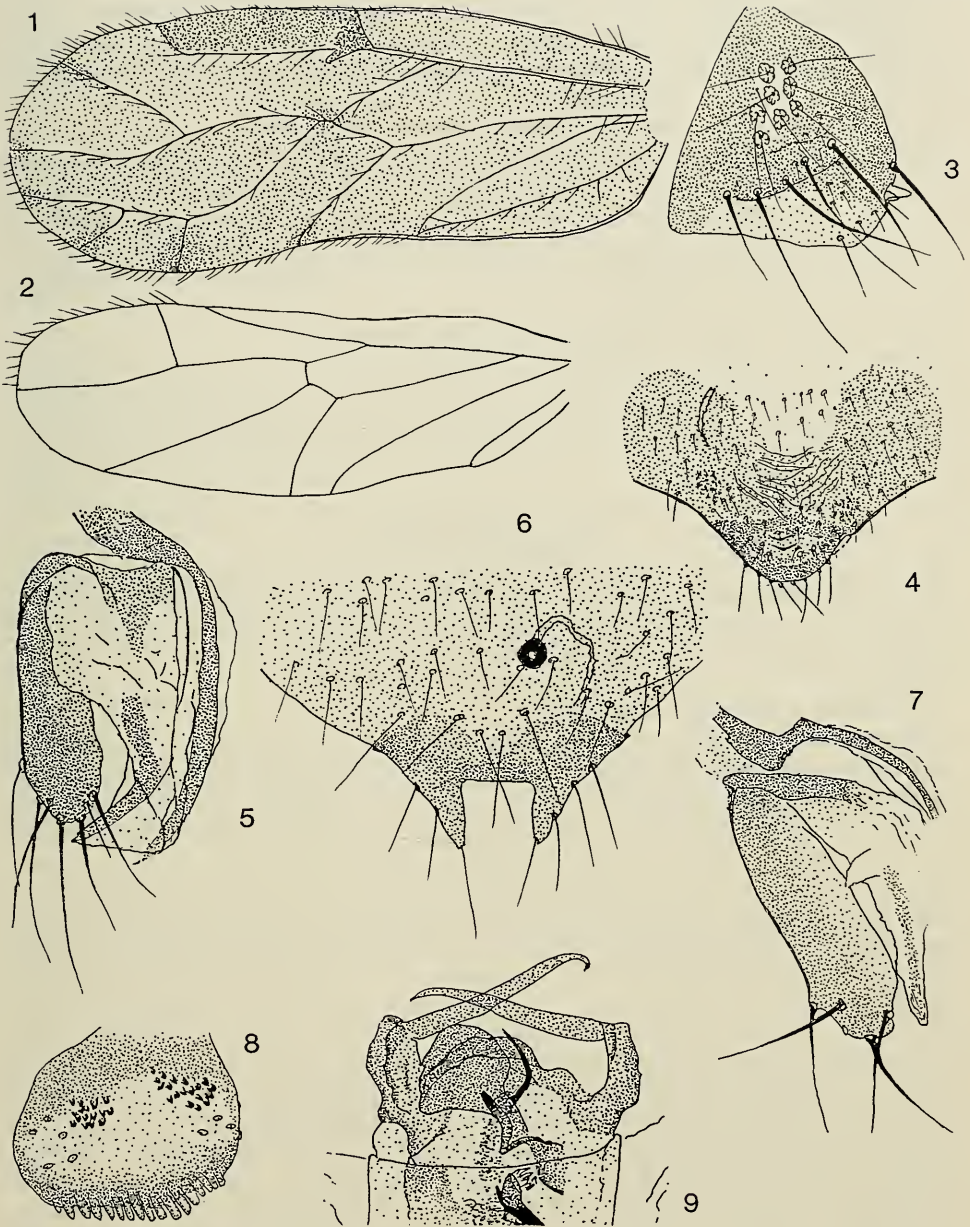
MATERIAL EXAMINED. Queensland. 1 female (holotype), from web of *Badumna candida*, Townsville, 2.ii.1987, M. F. Downes. 1 female (paratype), same data, 23.v.1988. Holotype and paratype in the Australian Museum.

DISCUSSION. *Ectopsocus downesi* belongs to the *E. hirsutus* group of species as defined by Thornton and Wong (1968, p. 145). It differs from *E. hirsutus* in having fewer setae on the external valve of the gonapophyses, one at the apex being stronger than the others. The hind margin of the apical lobe of the subgenital plate is not sinuous but smoothly rounded and the lobe is much more lightly sclerotized in the central part than *E. hirsutus*. The inner lining of the subgenital plate has a central area of sinuous lines flanked by an area of polygonal sculpturation on each side. This structure appears to be absent from other species of the group (cf. Thornton, 1962, fig. 36) except for *E. hirsutus* itself in which it has a different form. From *E. pilosus* Badonnell and *E. crinitus* Thornton and Wong *E. downesi* differs in the rounded hind margin of the posterior lobe of the subgenital plate and in those species the ventral valve is spiculate in the basal part. These spicules are not present in *E. downesi*. The subgenital plate resembles that of *E. thysanus* Thornton and Wong and *E. villosus* Thornton and Wong in that they all have a smoothly rounded hind margin bearing about eight strong setae. In *E. thysanus*, however, the lobe is evenly sclerotized and the hind margin of the plate lacks the strongly sclerotized margin lateral to the lobe. This is very strongly developed in *E. downesi*. In *E. downesi* the dorsal valve of the gonapophyses is apically narrow whereas in *E. thysanus* it is broad and membranous, apparently without any strengthening, longitudinal sclerotized band (Thornton and Wong, 1968, fig. 227). In *E. downesi* the ventral valve is much more strongly sclerotized than in *E. villosus* and *E. thysanus*. In *E. boharti* Thornton and Wong the posterior lobe of the subgenital plate is not clearly marked off from the body of the plate nor is it more heavily sclerotized. The dorsal valve of the gonapophyses has an accessory lobe and is not supported by a sclerotized bar.

Ectopsocus unipunctatus sp. nov.

FEMALE

Coloration (in alcohol). Head and appendages almost uniformly pale brown but



Figs. 1-9. *Ectopsocus downesi* sp. nov. 1. Fore wing, female. 2. Hind wing, female. 3. Paraproct, female. 4. Subgenital plate, female. 5. Gonapophyses, female. *Ectopsocus unipunctatus* sp. nov. 6. Subgenital plate, female. 7. Gonapophyses, female. 8. Posterior abdominal tergum, male. 9. Phallosome, male.

fourth segment of maxillary palp a little darker and abdomen has suggestion of lateral segmentally arranged marks. A tiny but very distinct black spot clearly visible on subgenital plate a little to left of midline. (This is part of the sclerotization of the 9th sternite which shows through the plate). Fore wings hyaline with faintest suggestion of brown tinge to membrane. Hind wings hyaline.

Morphology. Length of body: 1.7mm. Median epicranial suture indistinct. Head, except for glabrous genae, with scattered strong setae. Length of first flagellar segment: fl: .19mm. Base of first flagellar segment slightly enlarged. Eyes moderately large. IO/D (Badonnel): 2.3; PO: .8. Measurements of hind leg: F: .32mm; T: .55mm; t1: .2mm; t2: .08mm; rt: 2.5; ct: 16, 0. Fore wing length: 1.4mm; width: .51mm. Fore wing with Rs and M meeting in a point. Stem of Rs about half as long as R4 + 5. Stigmapophysis very prominent. Veins, except glabrous Cu2, with short setae. Margin glabrous. Hind wing with short crossvein between Rs and M; glabrous. Epiproct simply rounded behind, well sclerotized except for a lightly sclerotized ovoid apical area. Hind border with two long, strong setae arising from the margin in the lightly sclerotized area with another pair, one on either side, arising from the more heavily sclerotized area. A few smaller setae arise from the lightly sclerotized area. There is a transverse row of four setae across middle of epiproct with a second row of four between the first row and its base. Epiproct very similar to that of *E. vilhenai* Badonnel (cf. Badonnel, 1955, fig. 429) but with fewer setae in basal half. Paraproct with double cone on hind margin adjacent to which is a small seta with a large marginal seta dorsal to cone. Field of eight trichobothria and one seta without basal 'rosette' very similar to that of *E. vilhenai* (cf. Badonnel, 1955, figs. 430, 431). Subgenital plate (Fig. 6) with a pair of posterior lobes, lacking terminal hyaline extension but each with a terminal seta in addition to two or three lateral marginal setae. Border of subgenital plate between posterior lobes transverse. Gonapophyses (Fig. 7) with basal attachment of ventral and external valves very well sclerotized (visible as sinuous lines at low magnification). Dorsal valve membranous. Sclerification of 9th sternite (Fig. 6) in form of a small, very strongly sclerotized ring.

MALE

Coloration (in alcohol). As in female.

Morphology. General morphology of head as in female. Eyes larger than in female, just reaching level of vertex. IO/D (Badonnel): 2.2; PO: .6. Length of flagellar segments: fl: .19mm; f2: .09mm. Measurements of hind leg: F: .32mm; T: .57mm; t1: .2mm; t2: .09mm; rt: 2.2:1; ct: 16, 0. Fore wing length: 1.35mm; width: .21mm. Fore wing venation as in female but Rs stem about two thirds length of R4 + 5. Epiproct simple, with a few long, posterior setae. Hypandrium with sclerotized spur-like structure. Phallosome (Fig. 9) very large, complex, with long tongue-like structure arising near base and extending posteriorly. Posterior abdominal tergum (Fig. 8) (a little distorted in preparation) with a pair of rugose areas and a posterior comb.

MATERIAL EXAMINED. Queensland. 1 female (holotype), 2 males (including allotype), from web of *Badumna candida*, Townsville, 31.v.1988, M. F. Downes. 2 females (paratypes), same data, 18.iv.1988. Holotype, allotype and paratypes in Australian Museum.

DISCUSSION. *Ectopsocus unipunctatus* belongs to the *E. cinctus* group as defined by Thornton and Wong (1968, p.142). It is closest to *E. vilhenai*, which was described from Angola and has since been recorded from Madagascar and Reunion, Senegal, Nigeria, Jamaica, Trinidad, Mexico, Cuba, Marie Galante, Guadeloupe and Venezuela. Males of *E. unipunctatus* differ from those of *E. vilhenai* in the details of the distal part of the phallosome (cf. Badonnel, 1955, fig. 425) and in the structure of the posterior abdominal tergum (Badonnel, 1955, fig. 426). In particular, the posterior margin of the fused internal parameres is not sinuous as in *E. vilhenai* and the external parameres are almost straight, gradually tapering and curved at the ends. They are large enough to overlap

considerably in the midline. In *E. vilhenai* they are sinuous and much shorter, barely meeting in the midline. The anterior half of the phallosome is very similar to that of *E. vilhenai* which has a similar basal sclerite and spatulate posteriorly projecting flap (Badonnel, 1955, fig. 424). On the posterior abdominal tergum the arrangement and extent of the rugose areas are different, being less compact and less extensive in *E. unipunctatus* than in *E. vilhenai*. The female of *E. unipunctatus* lacks the apical extension to the posterior lobes of the subgenital plate (cf. Badonnel, 1955, fig. 427) and appears to lack a median rugose area on the subgenital plate basad of the posterior lobes.

Ectopsocus baliosus Thornton and Wong

MATERIAL EXAMINED. Queensland. 1 male, 1 female, from web of *Badumna candida*, Townsville, 6.v.1988, M. F. Downes. 1 female, same data, 14.iii.1988. 1 male, same data, 27.iv.1988, M. F. Downes.

E. baliosus was described from Malaya and subsequently recorded from Queensland, Reunion and Indonesia.

Ectopsocus russulus Smithers

MATERIAL EXAMINED. Queensland. 1 female, from web of *Badumna candida*, Townsville, 25.vi.1988. M. F. Downes.

E. russulus was described from Muogamarra Nature Reserve, near Sydney. This is the first subsequent record for the species.

PSEUDOCAECILIIDAE

Cladioneura foliata Smithers

MATERIAL EXAMINED. Queensland. 1 female, from web of *Badumna candida*, Townsville, 18.iv.1988. M. F. Downes. 1 female, same data, 28.i.1988, M. F. Downes.

Cladioneura foliata was described from Barrow Island, Western Australia. This is the first subsequent record for the species. In the two specimens from Queensland one has a definite crossvein between Rs and M in the fore wing and in the other, a much paler specimen, these two veins meet in a point as in the male type. The Queensland specimens are also a little larger than those from Barrow Island. The species is clearly somewhat variable in depth of colour pattern and details of venation. The present specimens agree well with the Barrow Island material in features of the genitalia.

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